REMARKS

Applicants have received and reviewed the Office Action dated October 15, 2008. By way of response, Applicants have cancelled claims 36 and 47 without prejudice and amended claims 23 and 35. No new matter has been added. Claims 23-35 and 37-46 are pending. Applicants submit that the amended claims are supported by the specification as filed.

Applicants submit that the amended claims are in condition for allowance, and notification to that effect is earnestly solicited.

Rejection of Claim 47 Under 35 U.S.C. §§ 101 and 112, Second Paragraph

The Examiner rejected claim 47 under 35 U.S.C. §§ 101 and 112, second paragraph. Claim 47 has been canceled, which renders these rejections moot. Accordingly, Applicants respectfully request withdrawal of these rejections.

Rejection of Claims Under 35 U.S.C. § 103(a)

The Examiner rejected claims 23-47 under 35 U.S.C 103(a) as obvious over Blake, US 964,083 in view of Rohr et al., US 6,059,120 and Newman et al., US 4,962,858. Claim 47 has been canceled, which renders this rejection moot for this claim. Applicants respectfully traverse this rejection.

The cited references, either alone or in combination, do not teach or suggest that a skilled worker should alter the apparatus disclosed by the Blake reference so that particles of different sizes are sent to and dropped from opposite ends of the belt. This separation can be achieved by an embodiment of the present apparatus including a single spiral formation, preferably in the form of a rib, wherein the spiral formation is in the form of a continuous spiral. The Blake reference, in contrast, expressly discloses employing a belt with a series of parallel or substantially parallel grooves running obliquely to the direction of travel of the belt (Blake par 43 – 46). An apparatus including such grooves does not teach or suggest the single spiral rib of the present invention.

Further, the separation of light- to medium-density particles as taught by Blake occurs differently to the separation taught by the present invention. This feature of separation, in isolation, establishes inventiveness of the present invention. While this feature was referred to in

the previous response to the examiner's official action, it is discussed again for purposes of clarity. It is thus necessary to consider the manner of operation of Blake's apparatus in detail in order to illustrate the differences between Blake and the invention. Blake teaches movement of an endless flexible belt at right angles to the longitudinal axis of the apparatus. Substantially parallel (obliquely disposed) grooves are a feature of the belt. Heavy particles are captured and retained in said grooves, while light particles are washed (or blown) over said grooves, ultimately into collection tray P and the unreferenced collection tray located between reference numerals E and D in Figure 1 of Blake. Heavy particles travel over the higher edge of the belt in the direction of motion of the belt (i.e. over the rollers situated near reference numeral D, depending on the direction of travel of the belt). Therefore, separation of heavy particles relative to light particles occurs at 90° relative to each other, irrespective of which light particle collection tray one has regard to. Also, particles are washed and concentrated in the center of the sag of the belt.

The present invention operates differently to Blake and holds the advantages of increased efficiency, recovery and profitability. It achieves these advantages not only in providing a variable concave belt profile (dealt with in more detail below) and which is not shown in Blake, but also through repetitive density assessment of particles, a more accurate scrubbing of these particles and an increased retention time of the particles. Separation of heavy versus light particles occurs at opposite ends of the belt (i.e. at 180° relative to each other) in the following way. Particles are introduced into the (concave) concentration area. These particles are then fluidized and heavy particles settle to the surface of the belt and are urged upward towards the upper end of the belt (or upper belt flight) by virtue of the continuous spiral rib formation located on the belt and in a direction transverse to belt travel.

Light particles float and by virtue of gravity are washed downward to the lower end of the belt (or towards the lower belt flight). Heavy particles are then removed from the concentration area after it passes over the edge of the belt located at the upper belt flight. Medium to low density particles having been washed down from the upper belt flight to the lower belt flight are assessed again by virtue of the movement of the belt.

Belt movement, the examiner will appreciate, results in particle movement in three directions: the first direction being in line with the direction of belt movement, the second by virtue of the continuous spiral towards the upper belt flight, and the third by virtue of the fluid

(or water) towards the lower belt flight. Relatively heavy particles descend to the surface of the belt and are urged toward the upper belt flight by virtue of the operation of the continuous spiral rib. Relatively light particles are washed or carried to the lower belt flight to ultimately exit at the lower belt edge.

The combination of the aforementioned movements of particles results in a rolling, corkscrew-like movement (spiral), which is repeated as the heavy, medium and light particles travel towards the upper and lower belt flights, as the case may be (see page 9, paragraphs 4 and 5 of the detailed description of the invention). This allows for a constant re-evaluation of density assessment of the particles that are undergoing separation, as well as a longer retention period. The intensity of separation can be controlled using the variable concave profile of the belt.

It is useful to explain the symmetry of the cross-sectional profile of the belt in order to understand the mechanism behind the intensity of separation. Figure 4 of the invention shows a symmetrical cross-sectional profile of the belt, while Figure 5 shows an asymmetrical cross-sectional belt profile. Figure 5 illustrates the utility of having a variable (and where appropriate asymmetrical) cross-sectional belt profile. In fact, the additional adjustment of the rightmost idler roller in Figure 5 creates an asymmetrical cross-sectional belt profile within an existing asymmetrical cross-sectional belt profile. In other words, by moving the axis of symmetry from the center of the cross-sectional width of the belt in Figure 4, to the center of the concave depression in Figure 5, the cross-sectional depression itself can be subject of an asymmetrical belt profile. Whereas Figure 4 would illustrate to positional symmetry (or asymmetry as the case may be) of the belt generally, Figure 5 would illustrate to shape symmetry of the concavity on a particular position on the belt. Using this feature, the intensity of the rolling, corkscrew-like movement of particles as aforesaid, can be controlled.

Having regard to Figure 1 of Blake, which without more merely teaches a symmetrical cross-sectional belt profile (not variable), suggests that one of ordinary skill would not have considered obvious the advantages posed by the present invention and in particular, the feature and advantages available in having a variable concave belt profile.

In light of the above, it is clear that light particles and heavy particles are separated in opposite directions, i.e. at 180°, relative to each other. Medium density particles are repetitively assessed by virtue of the above-mentioned rolling movement. This leads to a higher recovery of relatively heavy particles. Blake will on the other hand allow medium to light particles to simply

wash away. The present invention prevents this and takes the invention as claimed beyond the reaches of ordinary innovation. The feature of separation of heavy particles relative to light particles at opposite ends of the belt has been incorporated into the claims and we therefore trust that the examiner withdraws the rejection based on obviousness for this reason alone.

Additional features that distinguish the presently claimed method and apparatus were discussed in the previous response to the prior art rejections. Applicants respectfully submit that these distinguishing features apply equally to the present claims and rejections.

Applicants reiterate that the present method and apparatus include at least three novel and distinguishing features. The sum and/or combination of these three distinguishing features not only provide novelty, but also inventiveness, it is submitted, of the present invention over the cited prior art. It should be noted at this point that none of the prior art cited teaches or suggests any of the novel features as aforementioned.

In support of this, Blake is dated 1910, while Newman has a publication date of 1990. There is no teaching in Newman that would allow a person of ordinary skill to utilize a concave belt in a variably concave. Newman's belt, throughout the detailed description and with due regard to the accompanying figures, teaches a belt having a straight profile. Figures 2 and 4 of Newman clearly show a straight arrangement of support or idler rollers 35. In addition, idler rollers 55 are present to control belt tension. Support rollers 35 and idler rollers 55, in combination, teaches away from having a concave belt profile, let alone a variably concave belt profile. It is clear that the Newman apparatus intended to have a belt that has a straight profile. Further, Figures 2 and 4 of Newman reveal that riffles 27, opening means 37 and metal rods 39 are required to be in close proximity to the belt. Metal bars 39 have the additional feature of maintaining the sluice box 19 intact (see col. 5, lines 52 to 55). This implies that the metal bars 39 must remain static, otherwise the structural integrity of the sluice box 19 may be compromised. This interpretation of the Newman apparatus is in line with its teaching of a straight belt profile.

Therefore, over a period of 80 years, had the idea of providing a variable concave profile of the Blake belt been obvious to a person of ordinary skill in light of Blake and Newman, Newman would have disclosed such a feature. Newman, as has been shown, clearly teaches away from a variably concave belt profile.

Rohr was published in 2000 and discloses a belt having baffle plates mounted on a conveyor belt. There is no teaching of providing a variable concave profile in the belt of Rohr. Ten years had elapsed between Newman and Rohr, and if the idea of providing a variably concave profile in a heavy particle apparatus was obvious, as the examiner so forcefully asserts, then one would expect such a feature to be disclosed in Rohr. No such feature is disclosed.

An important feature of the Rohr apparatus is the presence of a knocking or striking roller 13. This, taken together with support roller 9, suggests that the belt has to necessarily be taut in order to give effect to the striking roller 13. A substantially loose belt, as would feature in an apparatus having a variably concave belt profile, would render the effect of having a striking roller 13 useless. Having regard to Figure 9, it is clear that the eccentrics 36, which support the striking roller 13, are designed to be static. These design considerations are inconsistent with the idea of having a variable concave profile in a belt.

Therefore, there is no suggestion to combine the teachings and suggestions of Blake, Newman and Rohr, as advanced by the examiner, to provide a variable concave profile in a belt, except from using the applicants' invention as a template through a hindsight reconstruction of the applicants' claims (see *Ex Parte Crawford et al, Appeal 20062429, decided May 30, 2007*).

In light of the examiner's reliance on a common sense benefit argument in so far as it applies to having a variable concave belt profile, applicants remark as follows. Applicants respectfully submit that the "common-sense benefit" of the present application is perceptible only with the use of hindsight bias and of argument reliant on ex-post reasoning (see KSR International Co. v Teleflex Inc. 127 S. Crt. 1727, 82 USPQ2d at 1397). Applicants believe that before having read their disclosure, the presently claimed invention would not seem to result from common sense.

The facts are that Blake was not in 1910 faced with considerations that would suggest reducing the quantum of fluidizing material in order to allow the operation of his invention. Rohr considered recycling water, but only to the extent that such a feature allowed the capture of additional fine gold material, which would otherwise be lost. Newman and Rohr teach that their belts have to necessarily be taut in order to achieve he objects it purports to achieve. The argument in respect of ordinary common sense in light of the cited prior art documents must accordingly fail.

Further, the common-sense belief referred to in the rejection is a conclusory statement with insufficient factual support in the rejection. An obviousness rejection cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness (as stated in *KSR Int'l. Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741(2007),* quoting In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006). The rejection, with respect, does not provide any source of information in the prior art cited (whether in the field of the invention or otherwise) that sustains the argument of a common sense benefit (*Ex parte Koizumi et al Board of Patent Appeals Decision dated 8 April 2009*). To allow such a common-sense benefit argument would be manifestly unfair because the rejection does not prove, from a prior art perspective, whether or not a variably concave profiled belt was an element known in, or that existed in, the prior art.

In addition, the cited references themselves point to the presently claimed invention providing a solution to a long standing problem. Blake was published 93 years before the priority date of the present invention. Newman was published 13 years prior to the priority date of the present invention, and Rohr, 3 years. As illustrated in detail above, none of the cited prior art documents teach, motivate or suggest a variable concave profile of the belt employed in the presently claimed invention. The age of the Blake and Newman references highlight the difficulty in solving the problems addressed by the presently claimed invention.

In light of the aforementioned, Applicants respectfully submit that the invention as described and claimed is both novel and nonobvious, and therefore requests that the application be accepted.

Summary

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: 15 Apr 09

Mark T. Skoog
Reg. No. 40,178

MTS:kf

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